

**AMENDMENTS TO THE DRAWINGS**

The attached “Replacement Sheet(s)” of drawings include(s) changes to Figures 1, 2, 3, and 4. The attached “Replacement Sheets” 1, 2, and 3 replace the original sheets 1, 2, and 3.

## **REMARKS**

Claims 1 - 16 are now pending in the application. Claim 8 has been amended to correct a typographical error. The amendment does not affect the scope of claim 8 as originally filed and, thus, is not a narrowing amendment.

The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

## **DRAWINGS**

The drawings stand objected to for certain informalities. Applicant(s) have attached revised drawings for the Examiner's approval. In the "Replacement Sheets" Figures 1, 2, 3, and 4 are designated as "prior art."

## **REJECTION UNDER 35 U.S.C. § 103**

Claims 1–16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Figure 1, in view of Yang (U.S. Pat. No. 4,689,533) and Sheu et al. (U.S. Pat. No. 6,049,178). The Examiner states, *inter alia*, that "[i]t would have been obvious ... to combine drive circuit of dc motor of Prior art fig 1 with delay circuit and discharge circuit of Yang and Sheu et al for improved control." The Examiner's rejection is respectfully traversed.

### **A. *The Prior Art References Fail To Teach Or Suggest All Claim Limitations***

At the outset, Applicants note that to establish obviousness of a claimed invention, "all the claim limitations must be taught or suggested by the prior art. MPEP

§ 2143.03, *citing In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (“All words in a claim must be considered in judging the patentability of that claim against the prior art.”). Further, “[i]n determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification.” MPEP § 2143.01, *citing In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Applicants respectfully submit that a number of claimed features of the present invention are not taught or suggested by the combination relied upon by the Examiner. In addition, Applicants contend that the Examiner has not established that the references provide a basis for a person having ordinary skill in the art to make the proposed combination.

#### 1. Claims 1-7

Claim 1 recites “a discharge circuit arrangement having a switched solid state device and coupled to the normally closed contact of the relay, the discharge circuit arrangement operable to inhibit current flow from the DC motor until the relay is in a normally closed contact position.” The combined prior art references fail to teach or suggest such a discharge circuit arrangement.

With regard to Yang, the Examiner points to a resistor and a capacitor connected in series with a relay as a “delay circuit with discharge circuit.” Yang, col. 7, Lines 30-35; Office Action, paragraph 2. As best understood by Applicants, the Yang circuit

operates such that when the Yang relay (Yang, Figure 8, Ry 501) is in either a normally closed position or a normally open position, current flows from the relay to charge one of the Yang capacitors (Yang, Figure 8, C502).

The Yang circuitry, therefore, is not coupled to the normally closed contact of a relay, such that the discharge circuit inhibits current flow until the relay is in a normally closed position. In addition, the Yang circuitry is not configured to discharge current from the DC motor. Rather, the thing being discharged is the capacitor. Consequently, Yang fails to teach or suggest a “discharge circuit arrangement operable to inhibit current flow from the DC motor until the relay is in a normally closed contact position” as recited in Claim 1.

Sheu et al. likewise fails to teach or suggest a “discharge circuit arrangement operable to inhibit current from the DC motor until the relay is in a normally closed contact position” as recited by Claim 1. The Sheu et al. circuitry delays the flow of current from a storage battery to an oscillator for an emergency lamp. Sheu et al., col. 4, 39-56. Sheu et al., therefore, does not teach or suggest a discharge circuit arrangement coupled to the normally closed contact of a relay, operable to inhibit current flow until the relay is in a normally closed contact position.

The combination of references cited by the Examiner fails to teach or suggest all the limitations of Claim 1, and the Examiner has not established to the contrary. Moreover, Applicants respectfully submit that the references cannot be modified, or combined by a person having ordinary skill in the art to arrive at the present invention. Further, as discussed in more detail below, because the cited references do not speak

to the problem addressed by the present invention, motivation does not exist to combine or modify the references to arrive at the circuit arrangement recited by Claim 1.

For at least these reasons, Applicants believe that Claim 1, and claims 2-7 which depend directly or indirectly therefrom, are patentable and in condition for allowance. Applicants, therefore, respectfully request that the Examiner reconsider and withdraw the rejections to Claims 1-7.

## 2. Claims 8-13

Claim 8 recites the limitation of a discharge circuit arrangement that is “operable to control an operational state of a switched solid state device using energy stored in the DC motor.” The references relied upon by the Examiner, however, do not teach or suggest using discharge energy from a discharge source, such as a DC motor. Instead, the Yang and Sheu et al. disclose using energy from an AC power source or a battery.

The Yang circuit uses current from the power supply. (Yang, col. 7, lines 50-52). Yang does not disclose or suggest, though, using energy stored in the DC motor. Yang is not concerned with using energy stored in the DC motor because Yang does not address the problem that is solved by the present invention, namely, extending relay contact life (which is discussed in greater detail, below). Yang, therefore, provides no motivation to use energy stored in the DC motor.

Likewise, the Sheu et al. circuit uses current from a filtering and rectifying circuit from the power supply. (Sheu et al., col. 4, lines 35-38). Sheu et al. likewise does not teach or suggest using energy stored in a DC motor. Further, Sheu et al. provides no

motivation to do so again because it does not address the problem confronted by the present invention.

For at least the foregoing reasons, Applicants submit that Claim 8, and Claims 9-13 which depend directly or indirectly therefrom, are patentable and in condition for allowance. Applicants respectfully request that the Examiner reconsider and withdraw the rejections to Claims 8-13.

### 3. Claims 14-16

Claim 14 recites “a field-effect transistor having a drain terminal, a source terminal and a gate terminal, where the drain terminal is coupled to the normally closed contact of the relay.” Nowhere does Yang or Sheu et al. teach or suggest the use of a field-effect transistor having a drain terminal, a source terminal and a gate terminal, where the drain terminal is coupled to the normally closed contact of the relay. Consequently, a person having ordinary skill in the art could not modify the drive circuit shown in Figure 1 in view of Yang or Sheu et al. to arrive at the claimed invention.

Applicants believe that independent Claim 14 and Claims 15 and 16 which depend therefrom, are patentable over the cited art. Therefore, it is respectfully requested that the Examiner reconsider and withdraw the foregoing rejection.

### ***B. There is No Suggestion Or Motivation To Combine The Cited References***

In addition to all of the foregoing, Applicants submit that the Examiner has failed to establish a suggestion or motivation to combine the references cited. The Examiner states that “[i]t would have been obvious ... to combine drive circuit of dc motor of Prior

art fig 1 with delay circuit and discharge circuit of Yang and Sheu et al for improved control.” This statement standing alone, however, is insufficient to establish the requisite suggestion or motivation to combine references necessary to support the Examiner’s obviousness rejections.

To establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify or combine the references. MPEP § 2143. There must also be a reasonable expectation of success. *Id.* The motivation to combine references must come from the nature of the problem to be solved, the teachings of the prior art, or the knowledge of persons of ordinary skill in the art. MPEP § 2143.01.

As stated by the Federal Circuit, “[b]road conclusory statements regarding the teaching of multiple references, standing alone, are not ‘evidence’ of a suggestion or motivation to combine references. *In re Dembiczaik*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Rather, the showing must be “clear and particular.” *Id.*

The nature of the problems to be solved by each of the references in this case does not provide a motivation to combine. None of the references are directed to the nature of the problem to be solved by the present invention.

The present invention concerns the discharge of current from a DC motor after disconnect from the power supply, and its impact on the service life and failure of the relay contacts. Paragraph 4 of the present specification provides “[a]t the instance of disconnect from the battery, the motor becomes a generator whose voltage will be that of the battery, and whose instantaneous stored current will be equal to that applied to the motor at startup.” Paragraph 6 of the present specification provides: “When DC motor braking relay contacts close, the possibility exists of the contacts welding at the

instance of contact. Such welding can significantly reduce the life cycle of the relay. Therefore, it is desirable to provide a circuit arrangement that inhibits current flow until after the contacts are fully closed, thereby greatly extending the electrical life of the contacts.”

None of the references relied upon by the examiner are directed toward a similar problem. Yang is directed to circuitry to reverse the direction of rotation of an electric motor for an air circulating fan. Yang, Abstract. The Examiner points to a resistor and a capacitor connected in series with a relay as a “delay circuit with discharge circuit.” Yang, col. 7, lines 30-35; Office Action, paragraph 2. The function of the cited circuitry, as understood by Applicants, is to provide “a machine stop time interval between the forward and reverse revolutions to make the air flows naturally mixed and also to reduce the motor load.” Yang, col. 3, lines 45-48. Yang simply is not directed toward the problem of contact service life and preventing their welding during discharge of a DC motor.

Sheu et al. is directed toward a circuit for controlling operation of an emergency exit lamp with a delay circuit that enables a trigger circuit at a preset time period after a power outage has occurred. Sheu et al., Abstract. As understood by Applicants, the problem addressed by the Sheu et al. delay circuit is preventing “a large instantaneous starting current rush” to the emergency exit lamp from a storage battery in the event of a power outage. Sheu et al., col. 4, lines 39-56. Sheu et al. also is not directed toward extending the life of the contact by preventing welding during discharge of a DC motor.

Finally, Applicants’ Figure 1, being a drive circuit for a DC motor, is not directed toward the problem of contacts welding during discharge of a DC motor.

Because there is no suggestion or motivation to make the combination relied upon by the Examiner, Applicants submit that it is improper. For at least these reasons, reconsideration and withdrawal of the rejections are respectfully requested.

**CONCLUSION**

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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